

**DESCRIPTION****OIL-IN-WATER EMULSIFIED COMPOSITION, AND EXTERNAL PREPARATION  
FOR SKIN AND COSMETICS USING THE COMPOSITION**

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**CROSS-REFERENCE TO THE RELATED APPLICATIONS**

This is an application filed pursuant to 35 U.S.C. Section 111(a) with claiming the benefit of U.S. Provisional application Serial No. 60/558,548 filed April 2, 2004, under the provision 10 of 35 U.S.C. Section 111(b), pursuant to 35 U.S.C. Section 119(e)(1).

**TECHNICAL FIELD**

The present invention relates to an oil-in-water emulsified composition. Specifically, the present invention relates to an oil-in-water emulsified composition comprising lipopeptide compounds derived from microorganisms and xanthan gum, which is excellent in feeling upon use, moisture retention, emollient property and stability as well as environmental 20 suitability and safety for living organisms.

**BACKGROUND ART**

Oil-in-water emulsified compositions, providing fresh feeling upon use, are being widely used in cosmetics, quasi-drugs 25 and the like.

Generally, emulsified products are unstable to heat, and various methods for stably retaining the emulsified state are known. Among them, a method of increasing viscosity of the external phase is often employed. In case of oil-in-water 30 emulsified composition, natural water-soluble polymers such as xanthan gum, locust bean gum, guar gum and carrageenan, and

synthetic water-soluble polymers such as polyvinylalcohol, polyvinylpyrrolidone, sodium polyacrylate, carboxyvinyl polymer, alkyl-modified carboxyvinyl polymer and copolymer of alkyl-modified acrylic acid/methacrylic acid are used for the 5 purpose of increasing the viscosity of the external phase.

As surfactants used in oil-in-water emulsified compositions, nonionic surfactants such as sorbitan fatty acid ester, polyoxyethylene sorbitan fatty acid ester and polyoxyethylene alkylether have been conventionally used.

10 However, with respect to emulsified compound used in external preparation for skin and cosmetics, due to increasing concern in not only safety and mildness for skin but also environmental suitability, it is required to use a material having as high safety for the living body and as high 15 environmental suitability as possible, and reduction in usage of synthetic water-soluble polymers and nonionic surfactants which include petroleum in their starting materials is being demanded.

In order to solve these problems, various studies are 20 being made on oil-in-water emulsified compositions using water-soluble polymers and surfactants derived from natural materials. External preparation for skin and cosmetics using lipopeptide compounds derived from microorganisms are disclosed, for example, in JP-A-2000-327591 (W099/62482), 25 JP-A-2003-176211 (W003/013446), JP-A-2003-95853, JP-A-2003-12445, JP-A-2003-277220 and JP-A-2003-277250. However, in those techniques, there remain problems that emulsification is insufficient or that a stable emulsified product cannot be obtained.

**DISCLOSURE OF THE INVENTION**

An object of the present invention lies in provision of an oil-in-water emulsified composition which is excellent in feeling upon use, moisture retention, emollient property and stability as well as environmental suitability and safety for living organisms.

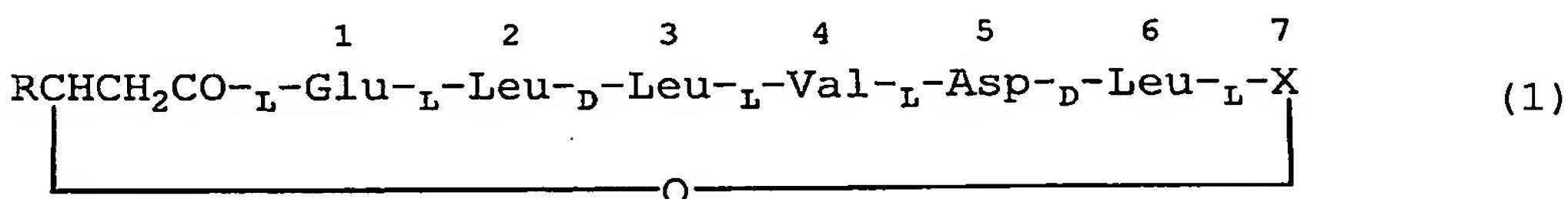
Another object of the present invention lies in provision of external preparations for skin and cosmetics using the oil-in-water emulsified composition.

As a result of intensive investigations to solve this problem, the present inventors have found that by using lipopeptide compounds derived from microorganisms and xanthan gum in combination, even without using synthetic water soluble polymer or nonionic surfactant, good emulsification can be attained to thereby obtain an oil-in-water emulsified composition which is excellent in feeling upon use, moisture retention, emollient property and stability as well as environmental suitability and safety for living organisms, and thus completed the present invention.

Accordingly, the invention relates to the following items.

1. An oil-in-water emulsified composition, which comprises 0.1 to 5 % by mass of (A) lipopeptide compound derived from a microorganism, 0.05 to 1.5 % by mass of (B) xanthan gum, 25 (C) oil component and (D) water.
2. The oil-in-water emulsified composition according to the above item 1, wherein the content of the oil component is from 25 to 70 % by mass.
3. The oil-in-water emulsified composition according to the above item 1, wherein the water content is from 15 to 55 % by mass.

4. The oil-in-water emulsified composition according to the above item 1, wherein the microorganism-derived lipopeptide compound (A) is at least one species selected from surfactins, its analogous compounds and salts thereof.
- 5 5. The oil-in-water emulsified composition according to the above item 4, wherein the surfactin or its analogous compound comprises at least one or more compounds as represented by the formula (1) below:



10 (in the formula, X represents an amino acid residue selected from the group consisting of leucine, isoleucine, valine, glycine, serine, alanine, threonine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine, cysteine, methionine, phenylalanine, tyrosine, tryptophan, histidine, 15 proline, 4-hydroxyproline and homoserine, and R represents a normal alkyl group having from 8 to 14 carbon atoms, an isoalkyl group having from 8 to 14 carbon atoms or an anteisoalkyl group having from 8 to 14 carbon atoms).

6. The oil-in-water emulsified composition according to the 20 above item 5, wherein X is residue of leucine, isoleucine or valine.

7. The oil-in-water emulsified composition according to the above item 4, wherein the salt is at least one compound selected from the group consisting of sodium salt, potassium salt, 25 monoethanolamine salt, diethanolamine salt, triethanolamine salt, arginine salt and lysine salt.

8. The oil-in-water emulsified composition according to the above item 4, wherein the microorganism-derived lipopeptide compound (A) is sodium surfactin.

9. The oil-in-water emulsified composition according to any 5 one of the above items 1 to 8, comprising no nonionic surfactant.

10. The oil-in-water emulsified composition according to any one of the above items 1 to 9, comprising no acrylic acid-based water-soluble polymer.

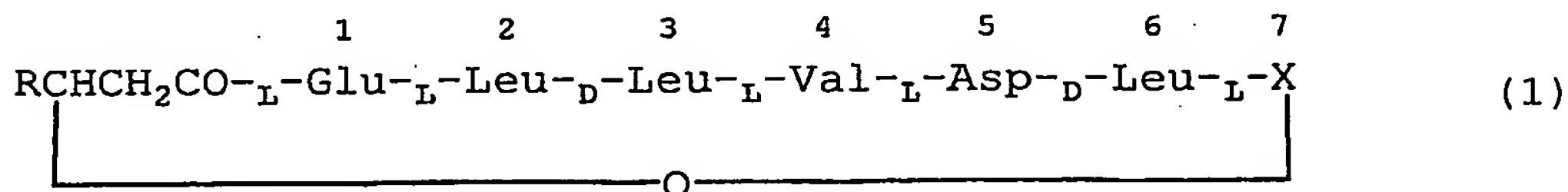
11. An external preparation for skin comprising the 10 oil-in-water emulsified composition according to any one of the above items 1 to 10.

12. A cosmetic comprising the oil-in-water emulsified composition according to any one of the above items 1 to 10.

The invention is explained below in detail.

15 Examples of the lipopeptide compound (A) used in the invention include lipopeptide compounds produced by microorganisms of genus *Bacillus* such as *Bacillus subtilis* described in JP-A-2000-327591 (WO99/62482). Preferable examples include salts of surfactin and salts of analogous 20 compounds thereof.

The surfactin herein refers to a compound represented by the formula (1):



or a composition containing two or more kinds of the compounds 25 represented by the formula (1).

In the above formula (1), X represents an amino acid residue selected from the group consisting of leucine, isoleucine,

valine, glycine, serine, alanine, threonine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, arginine, cysteine, methionine, phenylalanine, tyrosine, tryptophan, histidine, proline, 4-hydroxyproline and homoserine.

- 5 Preferred X is leucine residue, isoleucine residue or valine residue.

R is a normal alkyl group having 8 to 14 carbon atoms, an isoalkyl group having 8 to 14 carbon atoms or an anteiso-alkyl group having 8 to 14 carbon atoms. The normal alkyl group is 10 a straight chain alkyl group; the isoalkyl group usually has a structure which comprises  $(CH_3)_2CH-(CH_2)_n-$ ; and the anteiso-isoalkyl group usually has a structure which comprises  $CH_3-CH_2-CH(CH_3)-(CH_2)_n-$ .

The analogous compound of surfactin refers to compounds 15 having amino acid(s) substituted by other amino acid (s) in the aforementioned formula (1). Specifically, examples of such a compound include compounds where L-leucine as the second amino acid, L-valine as the fourth amino acid and/or D-leucine as the sixth amino acid are substituted by other amino acid(s), 20 but not limited thereto. Hereinafter, "surfactin or an analogous compound thereof" may be referred to as "surfactin".

Surfactin can be utilized as the inorganic salt or the organic salt of a compound as represented by the above formula (1). Metal used for counter ion may be of any kind, for example, 25 alkali metals such as sodium, potassium and lithium and alkaline earth metals such as calcium and magnesium, as long as the metal forms a salt with surfactin.

Examples of the organic salt include salts of trimethylamine, triethylamine, tributylamine, 30 monoethanolamine, diethanolamine, triethanolamine, lysine, arginine and choline.

Among these, salts of sodium, potassium, monoethanolamine, diethanolamine, triethanolamine, lysine and arginine are preferred, and sodium salt is particularly preferred.

As sodium surfactin, it is preferred to use a product 5 available on the market under the trade name of Aminofect (registered trademark of SHOWA DENKO K.K.).

The amount of lipopeptide compound contained in the composition of the present invention is preferably 0.1 to 5 % by mass, more preferably 0.5 to 4 % by mass, and still more 10 preferably 0.8 to 3 % by mass. When the amount is less than 0.1 % by mass, the stability of the composition may be insufficient, and also in cases where the compound is used in an amount exceeding 5 % by mass, it does not lead to increase 15 in effects which is commensurate with the excess amount used can be obtained.

External preparations for skin and cosmetics using microorganism-derived lipopeptide compounds are disclosed, for example, in JP-A-2000-327591 (WO99/62482), JP-A-2003-176211 (WO03/013446), JP-A-2003-95853, 20 JP-A-2003-12445, JP-A-2003-277220 and JP-A-2003-277250 mentioned in the "background art" paragraph. However, none of the documents describes that by using a microorganism-derived 25 lipopeptide compound in combination with xanthan gum, good emulsification property can be obtained without using synthetic water-soluble polymer or nonionic surfactant, and that thereby an oil-in-water emulsified composition excellent in feeling upon use, moisture retention, emollient property and stability as well as environmental suitability and safety for living 30 organisms can be obtained. The present invention is the first to disclose the technique.

The xanthan gum (B) used in the present invention is not

particularly limited and any kind can be used as long as the xanthan gum is generally used as raw material for external preparation for skin. Preferable examples of the xanthan gum usable in the present invention include Echo Gum, Echo Gum T and Echo Gum BT distributed by DAINIPPON PHARMACEUTICAL CO., LTD. The compounding amount of the xanthan gum in the composition of the present invention is preferably 0.05 to 1.5 % by mass, more preferably 0.08 to 0.7 % by mass, still more preferably 0.1 to 0.4 % by mass. If the amount of the xanthan gum is less than 0.05 % by mass, sufficient stability of the emulsified composition cannot be obtained. The amount of the xanthan gum exceeding 1.5 % by mass is unpreferable, since it would deteriorate feeling upon using the composition of the present invention.

The oil-in-water emulsified composition of the present invention contains oil component (C). Any oil material can be employed unless it is arbitrarily mixed with water. It is preferable that one or more selected from hydrocarbons, natural fats and oils, fatty acids, higher alcohols, alkyl glyceryl ethers, esters and silicone oils be compounded in. The total compounding amount of oil components is preferably 25 to 70 % by mass, more preferably 30 to 60 % by mass, based on the total amount of the composition.

The oil-in-water emulsified composition of the present invention contains water (D). The water content is to be contained as balance, and a preferable range of the water content is from 15 to 55 % by mass, and particularly preferred is from 20 to 50 % by mass.

The oil-in-water emulsified composition of the present invention does not necessarily require use of nonionic surfactants or acrylic acid-base water-soluble polymers which

are usually employed in production of conventional oil-in-water emulsified compositions and the composition of the present invention substantially does not have to contain such components. That is, preparation of the oil-in-water emulsified composition of the present invention may include addition of nonionic surfactants or acrylic acid base water-soluble polymers or may dispense with such components.

Examples of nonionic surfactant referred to herein include sorbitan fatty acid ester, polyoxyethylene sorbitan fatty acid ester, polyoxyethylene alkyl ether, glycerine fatty acid ester and polyoxyethylene glycerine fatty acid ester.

To be more specific, nonionic surfactants such as polyoxyethylene (10) alkyl (12,13) ether, polyoxyethylene lauryl ether, polyoxyethylene cetyl ether, polyoxyethylene 15 stearyl ether,

polyoxyethylene oleyl ether, polyoxyethylene (3,7,12) alkyl (12 to 14) ether, polyoxyethylene tridecyl ether, polyoxyethylene myristyl ether, polyoxyethylene-sec-alkyl (14) ether, polyoxyethylene isocetyl ether, polyoxyethylene 20 cetostearyl ether, polyoxyethylene (2,10,20) isostearyl ether, polyoxyethyleneoleylcetyl ether, polyoxyethylene (20) arachyl ether, polyoxyethylene octyldodecyl ether, polyoxyethylene behenyl ether, polyoxyethylene octylphenyl ether, polyoxyethylene nonylphenyl ether, polyoxyethylene 25 dinonylphenyl ether, polyoxyethylene (1) polyoxypropylene (1,2,4,8) cetyl ether, polyoxyethylene (5) polyoxypropylene (1,2,4,8) cetyl ether, polyoxyethylene (10) polyoxypropylene (1,2,4,8) cetyl ether, polyoxyethylene (20) polyoxypropylene (1,2,4,8) cetyl ether, polyoxyethylene polyoxypropylene lauryl 30 ether, polyoxyethylene (3) polyoxypropylene (34) stearyl ether, polyoxyethylene (4) polyoxypropylene (30) stearyl ether,

polyoxyethylene (34) polyoxypropylene (23) stearyl ether,  
polyoxyethylene polyoxypropylene cetyl ether, polyoxyethylene  
polyoxypropylene decyltetradecyl ether, polyethylene glycol  
monolaurate, ethylene glycol monostearate, polyethylene glycol  
5 monostearate, polyethylene glycol monooleate, ethylene glycol  
fatty acid ester, self-emulsifying ethylene glycol  
monostearate, diethylene glycol laurate, polyethylene glycol  
myristate, polyethylene glycol palmitate, diethylene glycol  
stearate, self-emulsifying polyethylene glycol (2)  
10 monostearate, polyethylene glycol isostearate, ethylene glycol  
dioctanoate, diethylene glycol dilaurate, polyethylene glycol  
dilaurate, polyethylene glycol (150) dipalmitate, ethylene  
glycol distearate, diethylene glycol distearate, polyethylene  
glycol distearate, ethylene glycol dioleate, polyethylene  
15 glycol dioleate, polyethylene glycol diricinoleate,  
polyoxyethylene (20) sorbitan monolaurate, polyoxyethylene  
(20) sorbitan monopalmitate, polyoxyethylene (6) sorbitan  
monostearate, polyoxyethylene (20) sorbitan monostearate,  
polyoxyethylene (20) sorbitan tristearate, polyoxyethylene (6)  
20 sorbitan monooleate, polyoxyethylene (20) sorbitan monooleate,  
polyoxyethylene (20) sorbitan trioleate,  
polyoxyethylene (20) coconut oil fatty acid sorbitan,  
polyoxyethylene (10 to 80) sorbitan monolaurate,  
polyoxyethylene sorbitan tristearate, polyoxyethylene (20)  
25 sorbitan isostearate,  
polyoxyethylene (150) sorbitan tristearate, polyoxyethylene  
castor oil, polyoxyethylene hydrogenated castor oil,  
polyoxyethylene (10) hydrogenated castor oil, polyoxyethylene  
(20) hydrogenated castor oil, polyoxyethylene (40)  
30 hydrogenated castor oil, polyoxyethylene (50) hydrogenated  
castor oil,

polyoxyethylene (60) hydrogenated castor oil, lipophilic glycerin monostearate, lipophilic glycerin monooleate, self-emulsifying glycerin monostearate, coconut oil fatty acid glycetyl, glycerin laurate, glycetyl myristate,  
5 glycetyl isostearate, glycetyl ricinoleate, glycetyl monohydroxystearate, glycerin oleate, glycetyl linoleate, glycetyl erucate, glycetyl behenate, wheat germ oil fatty acid glyceride, safflower oil fatty acid glycetyl, hydrogenated soybean fatty acid glycetyl, saturated fatty acid  
10 glyceride, cotton seed oil fatty acid glycetyl, monomyristate glycetyl monoisostearate, beef tallow monoglyceride, monolanolin fatty acid glycetyl, glycetyl sesquioleate, glycetyl distearate,  
15 glycetyl diisostearate, glycetyl diarachidate, sorbitan monolaurate, sorbitan monopalmitate, sorbitan monostearate,  
sorbitan monoisostearate, sorbitan monooleate, sorbitan sesquistearate, sorbitan sesquioleate, sorbitan tristearate,  
20 sorbitan trioleate, coconut oil fatty acid sorbitan, sorbitan isostearate, sorbitan sesquiisostearate, sorbitan distearate,  
diglycetyl isopalmitate, poly(4 to 10)glycetyl monolaurate, poly(10)glycetyl monomyristate, poly(2 to 10)glycetyl  
25 monostearate, poly(2 to 10)glycetyl monoisostearate, poly(2 to 10)glycetyl monooleate, diglycetyl sesquioleate, poly(2 to 10)glycetyl diisostearate, poly(6 to 10)glycetyl distearate,  
diglycetyl triisostearate, poly(10)glycetyl tristearate,  
30 poly(10)glycetyl trioleate, poly(2)glycetyl tetraisostearate,

decaglyceryl pentastearate, poly(6 to 10)glyceryl pentaoleate,  
poly(10)glyceryl heptastearate, decaglyceryl decastearate,  
poly(10)glyceryl decaoleate, concentrated poly(6)glyceryl  
5 ricinoleate, sucrose fatty acid ester, coconut oil fatty acid  
sucrose ester, alkyl glucoside, coconut oil alkyl  
dimethylamine oxide, lauryl dimethylamine oxide,  
dihydroxyethyl lauryl dimethylamine oxide, stearyl  
dimethylamine oxide, oleyl dimethylamine oxide,  
10 polyoxyethylene coconut oil alkyl dimethylamine oxide,  
polyoxyethylene (3) glyceryl triisostearate,  
polyoxyethylene (5) glyceryltriisostearate, polyoxyethylene  
(10) glyceryl triisostearate, polyoxyethylene (20) glyceryl  
triisostearate, polyoxyethylene (30) glyceryl  
15 triisostearate,  
polyoxyethylene (40) glyceryl triisostearate,  
polyoxyethylene (50) glyceryl triisostearate,  
polyoxyethylene (60) glyceryl triisostearate,  
polyoxyethylene (3) glyceryl isostearate,  
20 polyoxyethylene (5) glyceryl isostearate, polyoxyethylene (6)  
glyceryl isostearate, polyoxyethylene (8) glyceryl  
isostearate,  
polyoxyethylene (10) glyceryl isostearate, polyoxyethylene  
(15) glyceryl isostearate, polyoxyethylene (20) glyceryl  
25 isostearate,  
polyoxyethylene (25) glyceryl isostearate, polyoxyethylene  
(30) glyceryl isostearate, polyoxyethylene (40) glyceryl  
isostearate,  
polyoxyethylene (50) glyceryl isostearate, polyoxyethylene  
30 (60) glyceryl isostearate, polyoxyethylene (3) glyceryl  
tristearate,

polyoxyethylene (4) glyceryl tristearate, polyoxyethylene (5) glyceryl tristearate, polyoxyethylene (6) glyceryl tristearate,  
polyoxyethylene (10) glyceryl tristearate, polyoxyethylene 5 (20) glyceryl tristearate, polyoxyethylene (4) glyceryl distearate,  
polyoxyethylene (3) glyceryl trioleate, polyoxyethylene (5) glyceryl trioleate, polyoxyethylene (10) glyceryl trioleate,  
polyoxyethylene (20) glyceryl trioleate, polyoxyethylene 10 (30) glyceryl trioleate, polyoxyethylene (40) glyceryl trioleate,  
polyoxyethylene (50) glyceryl trioleate, polyoxyethylene (60) glyceryl trioleate, polyoxyethylene sorbit monolaurate,  
polyoxyethylene (40) sorbit oleate, polyoxyethylene (4) sorbit 15 tetraoleate, polyoxyethylene (3) sorbit tristearate,  
polyoxyethylene (30) sorbit tetraoleate, polyoxyethylene (40) sorbit tetraoleate, polyoxyethylene (60) sorbit tetraoleate,  
polyoxyethylene (3) sorbit isostearate, polyoxyethylene (40) sorbit oleate, polyoxyethylene (60) sorbit tetrastearate,  
polyoxyethylene (6) sorbit hexaoleate, polyoxyethylene sorbit 20 hexastearate and polyoxyethylene (40) sorbit pentaoleate.

Further, examples of the acrylic acid base water-soluble polymer include sodium polyacrylate, carboxyvinyl polymer, alkyl-modified carboxyvinyl polymer, acrylate/methacrylate 25 copolymer, ethylene/acrylic acid copolymer, acrylate/methacrylate alkyl (C 10 to 30) copolymer, acrylic acid based anion polymer and methacrylic acid based anion polymer.

In the emulsified composition of the present invention, 30 other ingredients which are usually used in conventional external preparations for skin and cosmetics may be optionally

compounded in within a range where the present invention can attain the objects of the invention.

Examples of such ingredients include hydrocarbons such as ozokerite,  $\alpha$ -olefin oligomer, light isoparaffin, light liquid isoparaffin, squalene, squalane, synthetic squalane, phytosqualane, ceresin, paraffin, polyethylene powder, polybutene, microcrystalline wax, liquid isoparaffin, liquid paraffin, mineral oil and vaseline;

natural waxes such as jojoba oil, carnauba wax, candelilla wax, rice bran wax, shellac, lanolin, mink sebaceous wax, spermaceti wax, sugarcane wax, sperm whale oil, beeswax and montan wax, natural fats and fatty oils such as avocado oil, almond oil, olive oil, extra virgin olive oil, sesame seed oil, rice bran oil, rice oil, rice germ oil, corn oil, safflower oil, soybean oil, maize oil, rape seed oil, persic oil, palm kernel oil, palm oil, castor oil, sunflower oil, high oleic sunflower oil, grape seed oil, cotton seed oil, coconut oil, hydrogenated coconut oil, beef tallow, hydrogenated oil, horse oil, mink oil, yolk oil, yolk fat oil, rose hip oil, kukui nut oil, evening primrose oil, wheat germ oil, peanut oil, Camellia japonica oil, Camellia kissi oil, cacao butter, Japan wax, beef bone tallow, nest's foot oil, swine tallow, equine tallow, ovine tallow, shea butter, macadamia nut oil and meadowfoam seed oil;

fatty acids such as lauric acid, myristic acid, palmitic acid, stearic acid, behenic acid, oleic acid, linoleic acid, linolenic acid,  $\gamma$ -linolenic acid, isostearic acid, 12-hydroxystearic acid, undecylenic acid and coconut oil fatty acid;

higher alcohols such as isostearyl alcohol, octyl dodecanol, hexyl decanol, cholesterol, phytosterol, lauryl alcohol, myristyl alcohol, cetyl alcohol, stearyl alcohol,

oleyl alcohol, behenyl alcohol and cetostearyl alcohol;  
alkylglyceryl ethers such as batyl alcohol, chimyl  
alcohol, serachyl alcohol and isostearyl glyceryl ether;  
esters such as isopropyl myristate, butyl myristate,  
5 isopropyl palmitate, ethyl stearate, butyl stearate, ethyl  
oleate, ethyl linoleate, isopropyl linoleate, cetyl caprylate,  
hexyl laurate, isoctyl myristate, decyl myristate, myristyl  
myristate, cetyl myristate, octadecyl myristate, cetyl  
palmitate, stearyl stearate, decyl oleate, oleyl oleate, cetyl  
10 ricinoleate, isostearyl laurate, isotridecyl myristate,  
isocetyl myristate, isostearyl myristate, octyldodecyl  
myristate, 2-ethylhexyl palmitate, isocetyl palmitate,  
isostearyl palmitate, 2-ethylhexyl stearate, isocetyl stearate,  
isodecyl oleate, octyldodecyl oleate, octyldodecyl ricinoleate,  
15 ethyl isostearate, isopropyl isostearate, cetyl  
2-ethylhexanoate, cetostearyl 2-ethylhexanoate, stearyl  
2-ethylhexanoate, hexyl isostearate, ethylene glycol  
dioctanoate, ethylene glycol dioleate, propylene glycol  
dicaprylate, propylene glycol dicaprylate/dicaprate,  
20 propylene glycol dicaprate, propylene glycol dioleate,  
neopentyl glycol dicaprate, neopentyl glycol dioctanoate,  
glyceryl tricaprylate, glyceryl tri 2-ethyl hexanoate,  
glyceryl tricaprylate/tricaprante, glyceryl  
tricaprylate/tricaprante/tristearate, glyceryl triundecylate,  
25 glyceryl triisopalmitate, glyceryl triisostearate,  
trimethylolpropane tri 2-ethylhexanoate, trimethylolpropane  
triisostearate, pentaerythrityl tetra 2-ethylhexanoate,  
pentaerythrityl tetramyristate, pentaerythrityl  
tetraisostearate, diglyceryl tetraisostearate, octyldodecyl  
30 neopantanote, isocetyl octanoate, isostearyl octanoate,  
2-ethylhexyl isopelargonate, hexyldecyl dimethyloctanoate,

octyldodecyl dimethyloctanoate, 2-ethylhexyl isopalmitate, isocetyl isostearate, isostearyl isostearate, octyldodecyl isostearate, lauryl lactate, myristyl lactate, cetyl lactate, octyldodecyl lactate, triethylcitrate, acetyltriethylcitrate,  
5 acetyltributylcitrate, trioctylcitrate, triisocetylcitrate, trioctyldodecyl citrate, diisostearyl malate, 2-ethylhexyl hydroxystearate, di 2-ethylhexyl succinate, diisopropyl adipate, diisobutyl adipate, dioctyl adipate, diheptylundecyl adipate, sebacate diethyl, diisopropyl sebacate, dioctyl  
10 sebacate, cholesteryl stearate, cholesteryl isostearate, cholesteryl hydroxystearate, cholesteryl oleate, dihydrocholesteryl oleate, phytosteryl isostearate, phytosteryl oleate, isocetyl 12-stearoyl hydroxystearate, stearyl 12-stearoyl hydroxystearate, isostearyl 12-stearoyl  
15 hydroxystearate, polyoxyethylene (3) polyoxypropylene (1) cetyl ether acetate, polyoxyethylene (3) polyoxypropylene (1) isocetyl ether acetate, isononyl isononanoate, octyl isononanoate, tridecyl isononanoate and isotridecyl isononanoate;  
20 silicone oils such as methyl polysiloxane, methylphenyl polysiloxane, methyl hydrogen polysiloxane, methyl cyclopolsiloxane, octamethyl cyclotetrasiloxane, decamethyl cyclopentasiloxane, dodecamethyl cyclohexasiloxane, octamethyl trisiloxane, decamethyl tetrasiloxane,  
25 tetradecamethyl hexasiloxane, highly polymerized methyl polysiloxane,  
dimethylsiloxane-methyl (polyoxyethylene) siloxane-methyl (polyoxypropylene) siloxane copolymer,  
dimethylsiloxane-methyl (polyoxyethylene) siloxane copolymer,  
30 dimethylsiloxane-methyl (polyoxypropylene) siloxane copolymer, dimethylsiloxane-methylcetyl oxysiloxane copolymer,

dimethylsiloxane-methyl stearoxysiloxane copolymer, polyether modified silicone, alcohol modified silicone, alkyl modified silicone and amino modified silicone;

5 polyhydric alcohols such as ethylene glycol, diethylene glycol, triethylene glycol, polyethylene glycol, propylene glycol, dipropylene glycol, polypropylene glycol, glycerin, diglycerin, polyglycerin, 3-methyl-1,3-butanediol, 1,3-butanediol, 1,2-pentanediol and 1,2-hexanediol;

10 saccharides such as mannitol, sorbitol, xylitol, maltitol, erythritol, pentaerythritol, glucose, sucrose, fructose, lactose, maltose, xylose and trehalose;

15 polymers such as sodium alginate, carrageenan, agar, furcellaran, guar gum and quince seed, Amorphophalus konjak (arum root) mannan, tamarind gum, tara gum, dextrin, starch, locust bean gum, gum arabic, gum gatti, karaya gum, gum tragacanth, arabinogalactan, pectin, quince, chitosan, curdlan, xanthan gum, gellan gum, cyclodextrin, dextran, pullulan, microcrystalline cellulose, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, 20 hydroxypropylmethyl cellulose, carboxymethyl cellulose, carboxy starch, cationized cellulose, starch phosphate ester, cationized guar gum, carboxymethyl-hydroxypropylated guar gum, hydroxypropylated guar gum, albumin, casein, gelatin, polyacrylic amide, polyethylene imine, highly polymerized 25 polyethylene glycol, polyvinyl alcohol, polyvinyl pyrrolidone, polyvinyl ether, polyacryl amide, acrylic acid copolymer, methacrylic acid copolymer, maleic acid copolymer, vinylpyridine copolymer, vinyl pyrrolidone based polymer, vinyl alcohol/vinyl pyrrolidone copolymer, 30 nitrogen-substituted acrylamide based polymer, amino modified silicone, cationized polymer, dimethylacryl ammonium based

polymer, modified silicone and polyoxyethylene/polyoxypropylene copolymer; alcohols such as ethanol, isopropyl alcohol, 1-butanol, 2-butanol and benzyl alcohol;

5 anionic surfactants such as coconut oil fatty acid potassium, coconut oil fatty acid sodium, coconut oil fatty acid triethanolamine, potassium laurate, sodium laurate, triethanolamine laurate, potassium myristate, sodium myristate, isopropanolamine myristate, potassium palmitate, sodium palmitate, isopropanolamine palmitate, potassium stearate, sodium stearate, triethanolamine stearate, potassium oleate, sodium oleate, castor oil fatty acid sodium, zinc undecylate, zinc laurate, zinc myristate, magnesium myristate, zinc palmitate, zinc stearate, calcium stearate, magnesium stearate,

10 15 aluminum stearate, calcium myristate, magnesium myristate, aluminum dimyristate, aluminum isostearate, polyoxyethylene lauryl ether acetate, sodium polyoxyethylene lauryl ether acetate, polyoxyethylene tridecyl ether acetate, sodium polyoxyethylene tridecyl ether acetate, sodium stearoyl lactate, sodium isostearoyl lactate, sodium lauroyl sarcosine, coconut oil fatty acid sarcosine, sodium coconut oil fatty acid sarcosine, coconut oil fatty acid sarcosine triethanolamine, lauroyl sarcosine, potassium lauroyl sarcosine, lauroyl sarcosine triethanolamine, oleoyl sarcosine, sodium myristoyl sarcosine, sodium stearoyl glutamate, coconut oil fatty acid acyl glutamic acid, potassium coconut oil fatty acid acyl glutamate, sodium coconut oil fatty acid acyl glutamate, coconut oil fatty acid acyl glutamate triethanolamine, lauroylacetyl glutamic acid, potassium lauroylacetyl glutamate, sodium

20 25 30 lauroylacetyl glutamate, lauroylacetyl glutamate triethanolamine, myristoylacetyl glutamic acid, potassium myristoylacetyl glutamate,

sodium myristoylacyl glutamate, stearoylacyl glutamic acid,  
potassium stearoylacyl glutamate, disodium stearoylacyl  
glutamate, sodium hydrogenated beef tallow fatty acid acyl  
glutamate, sodium coconut oil fatty acid/hydrogenated beef  
5 tallow fatty acid acyl glutamate, sodium coconut oil fatty acid  
methylalanine, lauroyl methylalanine, sodium lauroyl  
methylalanine, lauroyl methylalanine triethanolamine, sodium  
myristoyl methylalanine, sodium lauroyl methyltaurine,  
potassium coconut oil fatty acid methyltaurine, sodium coconut  
10 oil fatty acid methyltaurine, magnesium coconut oil fatty acid  
methyltaurine, sodium myristoyl methyltaurine, sodium  
palmitoylmethyltaurine, sodium stearoylmethyltaurine, sodium  
oleoyl methyltaurine, sodium alkane sulfonate, sodium  
tetradecene sulfonate, sodium sulfosuccinate dioctyl, disodium  
15 lauryl sulfosuccinate, sodium coconutoil fatty acid ethyl ester  
sulfonate, sodium lauryl sulfate, triethanolamine lauryl  
sulfate, sodium cetyl sulfate, triethanolamine alkyl  
(11,13,15) sulfate, sodium alkyl (12,13) sulfate,  
triethanolamine alkyl (12,13) sulfate, alkyl (12,14,16)  
20 ammonium sulfate, diethanolamine alkyl (12 to 13) sulfate,  
triethanolamine alkyl (12 to 14) sulfate, triethanolamine alkyl  
(12 to 15) sulfate, magnesium coconut oil alkyl  
sulfate/triethanolamine, lauryl ammonium sulfate, potassium  
lauryl sulfate, magnesium lauryl sulfate, monoethanolamine  
25 lauryl sulfate, diethanolamine lauryl sulfate, sodium myristyl  
sulfate, sodium stearylsulfate, sodium oleyl sulfate,  
triethanolamine oleyl sulfate, sodium polyoxyethylene lauryl  
ether sulfate, triethanolamine polyoxyethylene lauryl ether  
sulfate, sodium polyoxyethylene (1) alkyl (11,13,15) ether  
30 sulfate, triethanolamine polyoxyethylene (1) alkyl (11,13,15)  
ether sulfate, sodium polyoxyethylene (3) alkyl (11 to 15) ether

sulfate, sodium polyoxyethylene (2) alkyl (12,13) ether sulfate, sodium polyoxyethylene (3) alkyl (12 to 14) ether sulfate, sodium polyoxyethylene (3) alkyl (12 to 15) ether sulfate, sodium polyoxyethylene (2) lauryl ether sulfate, sodium polyoxyethylene (3) myristyl ether sulfate, sodium higher fatty acid alkanol amide sulfate ester, lauryl phosphate, sodium lauryl phosphate, potassium cetyl phosphate, diethanolamine cetyl phosphate, polyoxyethylene oleyl ether phosphate, polyoxyethylene lauryl ether phosphate, sodium polyoxyethylene 5 lauryl ether phosphate, polyoxyethylene cetyl ether phosphate, sodium polyoxyethylene cetyl ether phosphate, polyoxyethylene stearyl ether phosphate, polyoxyethylene oleyl ether phosphate, sodium polyoxyethylene oleyl ether phosphate, polyoxyethylene alkylphenyl ether phosphate, sodium polyoxyethylene 10 alkylphenyl ether phosphate, triethanolamine polyoxyethylene alkylphenyl ether phosphate, polyoxyethylene octyl ether phosphate, polyoxyethylene (10) alkyl (12,13) ether phosphate, polyoxyethylene alkyl (12 to 15) ether phosphate, polyoxyethylene alkyl (12 to 16) ether phosphate, 15 triethanolamine polyoxyethylene lauryl ether phosphate and diethanolamine polyoxyethylene oleyl ether phosphate; cationic surfactants such as dioctylamine, dimethylstearylamine, trilaurylamine, diethylaminoethylamide stearate, lauryl trimethylammonium 20 chloride, cetyl trimethylammonium chloride, cetyl trimethylammonium bromide, cetyltrimethylammonium saccharin, stearyl trimethylammonium chloride, alkyl (20 to 22) trimethylammonium chloride, lauryl trimethylammonium bromide, alkyl (16,18) trimethylammonium chloride, stearyl 25 trimethylammonium bromide, stearyl trimethylammonium saccharin, alkyl (28) trimethylammonium chloride,

di(polyoxyethylene) oleyl methylammonium (2EO) chloride,  
dipolyoxyethylene stearyl methylammonium chloride,  
polyoxyethylene (1) polyoxypropylene (25)  
diethylmethylammonium chloride, tri(polyoxyethylene) stearyl  
5 ammonium (5EO) chloride, distearyl dimethylammonium chloride,  
dialkyl (12 to 15) dimethylammonium chloride, dialkyl (12 to  
18) dimethylammonium chloride, dialkyl (14 to 18)  
dimethylammonium chloride, dicocoyl dimethylammonium chloride,  
dicetyl dimethylammonium chloride, isostearyllauryl  
10 dimethylammonium chloride, benzalkonium chloride, myristyl  
dimethylbenzyl ammonium chloride, lauryl  
dimethyl(ethylbenzyl) ammonium chloride, stearyl  
dimethylbenzyl ammonium chloride, lauryl pyridinium chloride,  
cetyl pyridinium chloride, lauroyl cholamino formylmethyl  
15 pyridinium chloride, stearoyl cholamino formylmethyl  
pyridinium chloride, alkyl isoquinolinium bromide, methyl  
benzethonium chloride and benzethonium chloride;  
ampholytic surfactants such as  
2-alkyl-N-carboxymethyl-N-hydroxyethyl imidazolium betaine,  
20 alkyldiamino ethyl glycine hydrochloride, sodium lauryldiamino  
ethyl glycine, sodium undecyl hydroxyethyl imidazolium betaine,  
undecyl-N-carboxymethyl imidazolium betaine, disodium coconut  
oil fatty acid acyl-N-carboxyethyl-N-hydroxyethyl  
ethylenediamine, disodium coconut oil fatty acid  
25 acyl-N-carboxyethoxyethyl-N-carboxyethyl ethylenediamine,  
disodium coconut oil fatty acid  
acyl-N-carboxymethoxyethyl-N-carboxymethyl ethylenediamine,  
sodium laurylaminopropionate, sodium laurylaminodipropionate,  
triethanolamine laurylaminopropionate, sodium palm oil fatty  
30 acid acyl-N-carboxyethyl-N-hydroxyethyl ethylenediamine,  
betaine lauryldimethylamino acetate, betaine coconut oil

alkyldimethylamino acetate, betaine stearyl dimethylamino acetate, sodium stearyl dimethyl betaine, coconut oil fatty acid amidopropyl betaine, palm oil fatty acid amidopropyl betaine, amidopropyl acetate betaine laurate, amidopropyl betaine 5 ricinoleate, stearyl dihydroxyethyl betaine and lauryl hydroxysulfobetaine;

natural surfactants such as saponin, lecithin, soybean phospholipid, hydrogenated soybean phospholipid, soybean lysophospholipid, hydrogenated soybean lysophospholipid, yolk 10 lecithin, hydrogenated yolk lysophosphatidylcholine, phosphatidylcholine, phosphatidylethanolamine, phosphatidylserine, sphingophospholipid, sphingomyelin, ganglioside, bile acid, cholic acid, deoxycholic acid, sodium cholate, sodium deoxycholate, spiculic acid, rhamnolipid, 15 trehalose lipid, sophorolipid and mannosyl erythritol lipid;

ultraviolet ray absorbers such as: para-aminobenzoic acid derivatives such as para-aminobenzoic acid, ethyl para-aminobenzoate, glyceryl para-aminobenzoate, amyl para-dimethyl aminobenzoate and 2-ethylhexyl para-dimethyl 20 aminobenzoate; cinnamic acid derivatives such as benzyl cinnamate, mono-2-ethyl hexanoate glyceryl dipara-methoxycinnamate, methyl 2,4-diisopropyl cinnamate, ethyl 2,4-diisopropyl cinnamate, potassium para-methoxycinnamate, sodium para-methoxycinnamate, 25 isopropyl para-methoxycinnamate, 2-ethylhexyl para-methoxycinnamate, 2-ethoxyethyl para-methoxycinnamate and ethyl para-ethoxycinnamate; urocanic acid derivatives such as urocanic acid and ethyl urocanate; benzophenone derivatives such as 2,4-dihydroxybenzophenone, 30 2,2',4,4'-tetrahydroxybenzophenone, sodium 2-hydroxy-4-methoxy-5-sulfobenzophenone,

- 2-hydroxy-4-methoxybenzophenone-5-sulfonate,  
2-hydroxy-4-methoxybenzophenone,  
2,2'-dihydroxy-4,4'-dimethoxybenzophenone and sodium  
2,2'-dihydroxy-4,4'-dimethoxy-5-sulfobenzophenone;
- 5 salicylic acid derivatives such as ethylene glycol salicylate,  
salicylate-2-ethylhexyl, phenyl salicylate, benzyl salicylate,  
p-tert-butylphenyl salicylate, homomenthyl salicylate and  
salicylate-3,3,5-trimethylcyclohexyl;
- 10 2-(2'-hydroxy-5'-methoxyphenyl)benzotriazole and  
4-tert-butyl-4'-methoxybenzoyl methane;  
powders and color materials such as: kaolin, silicic  
anhydride, magnesium aluminum silicate, sericite, talc, boron  
nitride, mica, montmorillonite, hemp cellulose powder, wheat  
starch, silk powder, maize starch; natural dyes such as nitro  
15 dyes, azo dyes, nitroso dyes, triphenylmethane dyes, xanthene  
dyes, quinoline dyes, anthraquinone dyes, indigo dyes, pyrene  
dyes, phthalocyanine dyes, flavonoid, quinone, porphyrin,  
water soluble annatto, sepia powder, caramel, guaiazulene,  
gardenia blue, gardenia yellow, cochineal, shikonin, sodium  
20 copper chlorophyllin, paprika dye, safflower red, safflower  
yellow, laccaic acid and riboflavinbutyrate ester; carbon black,  
yellow iron oxide, black iron oxide, red iron oxide, iron blue,  
ultramarine blue, zinc oxide, chromium oxide, titanium oxide,  
black titanium oxide, zirconium oxide, chromium hydroxide,  
25 alumina, magnesium oxide, barium sulfate, aluminum hydroxide,  
calcium carbonate, lithium cobalt titanate, manganese violet  
and pearl pigment.
- plant extracts such as Angelica keiskei extract, Uncaria  
gambir extract, avocado extract, sweet hydrangea leaf extract,  
30 Gynostemma pentaphyllum makino extract, Althaea officinalis  
extract, Arnica montana extract, oil soluble Arnica montana

extract, almond extract, aloe extract, Japanese styrax benzoin extract, Ginkgo biloba extract, Stinging nettle extract, Orris rhizome root extract, fennel extract, turmeric extract, dog rose fruit extract, Echinacea leaf extract, Scutellaria root extract, Phellodendron bark extract, Japanese captis extract, barley extract, okra extract, Hypericum perforatum extract, oil soluble Hypericum perforatum extract, Lamium album extract, oil soluble Lamium album extract, Ononis spinosa root extract, Nasturtium officinale extract, orange extract, orange flower water, seaweed extract, persimmon tannin, pueraria root extract, Japanese valerian extract, cattail extract, Chamomile (matricaria) extract, oil soluble Chamomile (matricaria) extract, Chamomile (matricaria) distillate, Avena sativa (oat) kernel extract, carrot extract, oil soluble carrot extract, carottoil, Artemisia capillaris extract, Glycyrrhiza glabra (licorice) extract, powdered Glycyrrhiza glabra (licorice) extract, Glycyrrhiza glabra (licorice) extract flavonoid, cantharides tincture, raspberry extract, kiwi extract, cinchona extract, cucumber extract, apricot kernel extract, quince seed extract, gardenia florida extract, Sasa albomarginata extract, Sophora root extract, walnut shell extract, Citrus paradisi (grapefruit) extract, Clematis vitalba leaf extract, black sugar extract, chlorella extract, mulberry bark extract, Cinnamon bark extract, Gentian extract, Geranium herb extract, black tea extract, Nuphar extract, burdock root extract, oil soluble burdock root extract, wheat germ extract, hydrolyzed wheat powder, rice bran extract, fermented rice bran extract, Symphytum officinale (comfrey) extract, Asiasarum root extract, Crocus sativus (saffron) extract, Saponaria officinalis extract, oil soluble salvia extract, Crataegus cuneata fruit extract, Zanthoxylum fruit

extract, Lentinus edodes extract, powdered Lentinus edodes extract, Rehmannia root extract, Lithospermum root extract, oil soluble Lithospermum root extract, Perilla herb extract, linden extract, oil soluble Tilia europaea extract, Filipendula extract, Peony root extract, Coix lacryma-jobi extract, ginger extract, oil soluble ginger extract, ginger tincture, Acorus calamus root extract, Betula pendula (birch) extract, oil soluble Betula alba (birch) extract, Betula pendula (birch) sap, Lonicera japonica extract, Equisetum arvense extract, oil soluble Equisetum arvense extract, scordinin, stevia extract, ivy extract, Crataegus oxyacantha (whitethorn) extract, sambucus extract, Juniperus communis extract, Achillea millefolium extract, oil soluble Achillea millefolium extract, Mentha piperita (peppermint) extract, Salvia officinalis (sage) extract, oil soluble Salvia officinalis (sage) extract, Salvia officinalis (sage) water, Malva Sylvestris (mallow) extract, Apium graveolens (celery) extract, Cnidium officinale extract, Cnidium officinale water, Swertia herb extract, Glycine max (soybean) extract, Jujube extract, thyme extract, green tea extract, tea leaf dry distilled solution, tea seed extract, clove extract, Citrus unshiu peel extract, Camellia japonica extract, Centella asiatica extract, oil soluble walnut extract, duku extract, Terminalia sericea extract, Capsicum tincture, Japanese angelica root extract, oil soluble Japanese angelica root extract, Japanese angelica root water, Calendula officinalis flower extract, oil soluble Calendula officinalis flower extract, soy milk powder, peach seed extract, Bitter orange peel extract, Houttuynia cordata extract, Solanum lycopersicum (tomato) extract, Potentilla tormentilla Schrk (Rosaceae) extract, fermented soybeans extract, Ginseng extract, oil soluble Ginseng extract, Allium sativum (garlic)

extract, wild rose extract, oil soluble wild rose extract, malt extract, malt root extract, Ophiopogon tuber extract, parsley extract, rye leaf juice concentrate, peppermint distillate, witch hazel distillate, witch hazel extract, rose extract,  
5 parietaria extract, Isodonis japonicus extract, Eriobotrya japonica leaf extract, oil soluble Eriobotrya japonica leaf extract, coltsfoot extract, hoelen extract, Ruscus aculeatus root extract, powdered Ruscus aculeatus root extract, grape extract, grape leaf extract, grape water, Hayflower extract,  
10 Luffa cylindrica fruit extract, Luffa cylindrica fruit water, Carthamus tinctorius (safflower) extract, oil soluble Tilia platyphyllos extract, linden distillate, Paeonia suffruticosa (peony) extract, Humulus lupulus (hops) extract, oil soluble Humulus lupulus (hops) extract, pine extract, Silybum Marianum  
15 (milk thistle) extract, Aesculus hippocastanum (horse chestnut) extract, oil soluble Aesculus hippocastanum (horse chestnut) extract, Sapindus mukroossi extract, Melissa officinalis (balm mint) extract, Melilotus officinalis (melilot) extract, Prunus persica (peach) leaf extract, oil  
20 soluble Prunus persica (peach) leaf extract, bean sprouts extract, Centaurea cyanus flower extract, Centaurea cyanus flower distillate, Eucalyptus globulus extract, Saxifrage extract, Lilium (lily) extract, Coix seed extract, oil soluble Coix seed extract, Artemisia princeps pampanini extract,  
25 Artemisia princeps pampanini water, Lavandula angustifolia (lavender) extract, Lavandula angustifolia (lavender) water, apple extract, Ganoderma lucidum extract, Lactuca sativa (lettuce) extract, lemon extract, Astragalus sinicus extract, Rosa centifolia (rose) flower water, Rosemarinus officinalis  
30 (rosemary) extract, oil soluble Rosemarinus officinalis (rosemary) extract, Anthemis nobilis extract and Sanguisorba

officinalis extract;

amino acids and peptides such as glycine, alanine, valine, leucine, isoleucine, serine, threonine, phenylalanine, tyrosine, tryptophan, cystine, cysteine, methionine, proline, 5 hydroxyproline, aspartic acid, asparagine, glutamic acid, glutamine, arginine, histidine, lysine,  $\gamma$ -aminobutyric acid, DL-pyrrolidonecarboxylic acid,  $\epsilon$ -aminocaproic acid, hydrolyzed elastin, water soluble elastin, hydrolyzed collagen, water soluble collagen, casein, glutathione, wheat peptides 10 and soybean peptide;

vitamins and factors acting like a vitamin such as: vitamin A and analogues thereof such as retinol, retinal, retinoic acid, retinol acetate and retinol palmitate; carotenoids such as  $\alpha$ -carotene,  $\beta$ -carotene,  $\gamma$ -carotene,  $\delta$ -carotene, lycopene, 15 zeaxanthin, cryptoxanthin, echinenon and astaxanthin; vitamin B<sub>1</sub> and analogues thereof such as thiamines; vitamin B<sub>2</sub> and analogues thereof such as riboflavin; vitamin B<sub>6</sub> and analogues thereof such as pyridoxine, pyridoxal and pyridoxamine; vitamin B<sub>12</sub> and analogues thereof such as cyanocobalamin; folic acids, 20 nicotinic acid, nicotinamide, pantothenic acids, biotins; vitamin C and analogues thereof such as L-ascorbic acid, sodium L-ascorbate, L-ascorbyl stearate, L-ascorbyl palmitate, L-ascorbyl dipalmitate, L-ascorbyl tetraisopalmitate, L-ascorbate sulfate disodium ester, magnesium L-ascorbyl, 25 sodium L-ascorbyl phosphate and L-ascorbate-2-glucoside; vitamin D and analogues thereof such as ergocalciferol and cholecalciferol; vitamin E and analogues thereof such as d- $\alpha$ -tocopherol, DL- $\alpha$ -tocopherol, dl- $\alpha$ -tocopherol acetate, dl- $\alpha$ -tocopherol succinate,  $\beta$ -tocopherol,  $\gamma$ -tocopherol and 30 d- $\delta$ -tocopherol; ubiquinones, vitamin K and analogues thereof, carnitine, ferulic acid,  $\gamma$ -oryzanol,  $\alpha$ -lipoic acid and orotic

acid;

antiseptic agents such as benzoic acid, sodium benzoate, undecylenic acid, salicylic acid, sorbic acid, potassium sorbate, dehydroacetic acid, sodium dehydroacetate, isobutyl 5 parahydroxybenzoate, isopropyl parahydroxybenzoate, ethyl parahydroxybenzoate, butyl parahydroxybenzoate, propyl parahydroxybenzoate, benzyl parahydroxybenzoate, methyl parahydroxybenzoate, sodium parahydroxybenzoate methyl, phenoxyethanol, light sensitive dye No. 101, light sensitive 10 dye No. 201 and light sensitive dye No. 401;

antioxidizing agents such as butylhydroxyanisole, butylhydroxytoluene, propyl gallate, erythorbic acid, sodium erythorbate, para-hydroxyanisole and octyl gallate;

chelating agents to bind to a metal ion such as trisodium 15 ethylenediaminehydroxyethyltriacetate, edetic acid, disodium edetate, trisodium edetate, tetrasodium edetate, sodium citrate, gluconic acid, phytic acid, sodium polyphosphate and sodium metaphosphate;

moisturizing agents such as hyaluronic acid, sodium 20 hyaluronate, sodium chondroitin sulfate, sodium lactate, sodium pyrrolidone carboxylate, betaine, lactic acid bacteria fermented solution, yeast extract and ceramide;

anti-inflammatory agents such as glycyrrhizic acid, trisodium glycyrrhizinate, dipotassium glycyrrhizinate, 25 monoammonium glycyrrhizinate,  $\beta$ -glycyrrhetic acid, glycerin glycyrrhetinate, stearyl glycyrrhetinate, lysozyme chloride, hydrocortisone and allantoin;

pH adjusting agents such as sodium hydroxide, potassium hydroxide and triethanolamine;

30 salts such as sodium chloride, potassium chloride, magnesium chloride and sodium sulfate;

α-hydroxy acids such as citric acid, glycolic acid, tartaric acid and lactic acid;

whitening agents such as arbutin, α-arbutin and placenta extract;

- 5        essential oils such as Archangelica officinalis (angelica) oil, Canangium odoratum (ylang ylang) oil, Canarium luzonicum (elemi) oil, orange oil, Chamomilla recutita (matricaria) oil, Anthemis nobilis oil, Elettaria cardamom (cardamon) oil, Acorus calamus (calamus) oil, Ferula galbaniflua (galbanum) oil, Cinnamomum camphora (camphor) oil, Daucus carota (carrot) seed oil, Salvia sclarea (clary sage) oil, Citrus paradisi (grapefruit) oil, Eugenia caryophyllus (clove) oil, Cinnamon bark oil, Coriandrum sativum (coriander) oil, Cupressus sempervirens (cypress) oil, Santalum album (sandalwood) oil, Juniperus virginiana (cedarwood) oil, Cympogon nardus (citronella) oil, Cinnamomum zeylanicum (Cinnamon) leaf oil, Jasmin officinale (jasmine) absolute oil, Juniperus communis (juniper Berry) oil, Zingiber officinale (ginger) extract, Mentha spicata (spearmint) oil, Salvia officinalis (sage) oil, cedar oil, Pelargonium graveolens (geranium) oil, Thymus vulgaris (thyme) oil, Melaleuca alternifolia (tea tree) oil, Myristica fragrans (nutmeg) oil, Melaleuca qu. viridiflara (niaouli) oil, Citrus aurantium (neroli) oil, pine oil, Ocimum basilicum (basil) oil, Mentha arvensis oil, Pogostemon patchouli (patchouli) oil, Cymbopogon martini (palmarosa) oil, Foeniculum vulgare (fennel) oil, Citrus bigaradia (petitgrain) oil, Piper nigrum (black pepper) oil, Boswellia carterii (frankincense) oil, Vetiveria zizanoides (vetivert) oil, Mentha piperita (peppermint) oil, 30 Citrus bergamia (bergamot) oil, benzoin oil, Aniba rosaeodora (bois de rose) oil, Origanum majorana (marjoram) oil, mandarin

oil, *Conumiphora myrrha* (myrrh) oil, *Melissa officinalis* (balm mint) oil, *Eucalyptus globulus* oil, *Citrus junos* oil, *Citrus aurantifolia* (lime) oil, *Ravensara aromaticum* (ravensara) oil, *Lavandula latifolia* (lavandin) oil, *Lavandula angustifolia* (lavender) oil, *Tilia vulgaris* (linden) oil, lemon oil, lemon grass oil, rose oil, *Aniba rosaeodora* (rosewood) oil, *Rosemarinus officinalis* (rosemary) oil and *Levisticum officinale* (lovage) oil;

10 terpenes such as limonene, pinene, terpinene, terpinolene, myrcene and longifeelene;

fragrance, and the like.

Furthermore, to the cosmetic of the invention may also be added any existing raw material of cosmetics at a general concentration. All raw materials of cosmetics described in, for example, *Keshouhin genryou kizyun* (Standards of raw materials of cosmetics), second edition, notes, edited by Society of Japanese Pharmacopoeia, 1984 (YAKUJI NIPPO LIMITED.), *Keshouhin genryou kizyun-gai seibun kikaku* (Standards of raw materials of cosmetics, nonstandard ingredients), under the editorship of Pharmaceutical Affairs Bureau Evaluation and Registration Division, 1993 (YAKUJI NIPPO LIMITED.), *Keshouhin genryou kizyun-gai seibun kikaku tsuiho* (Standards of raw materials of cosmetics, nonstandard ingredient Supplement), under the editorship of Pharmaceutical Affairs Bureau Evaluation and Registration Division, 1993 (YAKUJI NIPPO LIMITED.), *Keshouhin syubetsu kyoka kizyun* (Standards of cosmetic classification permission), under the editorship of Pharmaceutical Affairs Bureau Evaluation and Registration Division, 1993 (YAKUJI NIPPO LIMITED.), *Keshouhin syubetsu haigou seibun kikaku* (Standards of cosmetic classification ingredients), under the editorship of Pharmaceutical Affairs

Bureau Evaluation and Registration Division, 1997 (YAKUJI NIPPO LIMITED.), Keshouhingenryoujiten (Dictionary of rawmaterials of cosmetics), 1991 (Nikko Chemicals Co., Ltd.) and the like may be used.

5       The oil-in-water emulsified composition of the present invention can be prepared by a general emulsification method. That is, the composition can be prepared by using general-purpose stirrers or emulsifiers such as a colloid mill, a homomixer, a high-pressure homogenizer, an ultrasonic emulsifier and the  
10      like.

The oil-in-water emulsified composition of the invention thus obtained can be suitably used in external preparations for skin such as emulsion and cream and in cosmetics for basic skin care, makeup and body care such as milky lotion, essence,  
15      skin cream, makeup base lotion, makeup base cream, milky-liquid type foundation, cream-type foundation, creamy eye color, creamy cheek color and pack.

#### BEST MODE FOR CARRYING OUT THE INVENTION

20       The present invention is explained in more detail below by way of Examples, however the invention is by no means limited to these Examples. In Examples demonstrated below, glycerin for use had a concentration of 98 mass% or more. Sodium surfactin for use was Aminofect (registered trademark) manufactured by  
25      SHOWA DENKO K.K. What the mark "%" indicates is percentage by mass.

Examples 1 to 5 and Comparative Examples 1 to 4:

Emulsified compositions each having a composition as  
30      shown in Table 1 were prepared according to the preparation method described below. Using the compositions, storage

stability tests were conducted. In the tests, after leaving test samples to stand at 40°C for 8 weeks in a glass bottle, the condition and appearance were observed. Samples in which separation was observed were evaluated "x" while samples in  
5 which no separation was found were evaluated as "O".

Table 1

composition	Ex.1	Ex.2	Ex.3	Ex.4	Ex.5	Comp. Ex.1	Comp. Ex.2	Comp. Ex.3	Comp. Ex.4
I sodium surfactin glycerin purified water	2% 8% balance	2% 8% balance	2% 4% balance	2% 8% balance	2% 8% balance	— 8% balance	— 8% balance	2% 8% balance	0.01% 8%
II squalane liquid paraffin isonyonyl isononanoate glyceryl tri-2-ethylhexanoate dimethicone behenyl alcohol cholesterol methylparaben propylparaben	9.65% 16% 8% 8% 8% — — 0.1% 0.05%	9.65% 11.65% 8% 8% 8% 4% — 0.1% 0.05%	16% 9.65% 8% 8% 6% — — 0.1% 0.05%	16% 8% 8% 8% 8% 4% — 0.1% 0.05%	9.25% 16% 8% 8% 6% — — 0.1% 0.05%	9.65% 16% 8% 8% 8% — — 0.1% 0.05%	9.65% 16% 8% 8% 8% — — 0.1% 0.05%	9.65% 16% 8% 8% 8% — — 0.1% 0.05%	9.65% 16% 8% 8% 8% — — 0.1% 0.05%
III xanthan gum (2% aqueous solution) storage stability	10% ○	4% ○	8% ○	8% ○	10% — ○	— ○ ○	10% — ○ ○	0.5% — X	— — X

[Preparation method of cosmetic]

The components in (I) and the components in (II) were separately mixed and heated to 85°C. To the mixture of the components in (I), the mixture of the components in (II) was gradually added while stirring the mixed components (I) by a homomixer, and further, the components in (III) were added thereto, and the resultant mixture was further stirred. After cooling the mixture to 30°C while stirring, the stirring was stopped and the resultant mixture was left standing at room temperature.

[Results]

As is clear from Table 1, the emulsified compositions of the present invention (Examples 1 to 5) exhibited more excellent storage stability, in comparison with the emulsified compositions of Comparative Examples 1 to 4.

Example 6 and Comparative Example 5:

Emulsified compositions each having a composition as shown in Table 2 were prepared according to the preparation method described below. Using the compositions, storage stability tests as aforementioned were conducted.

Table 2

composition		Ex.6	Comp. Ex. 6
I	sodium surfactin	2%	2%
	glycerin	8%	8%
	purified water	balance	balance
II	squalane	9.65%	9.65%
	liquid paraffin	16%	16%
	isononyl isononanoate	8%	8%
	glyceryl tri-2-ethylhexanoate	8%	8%
	dimethicone	8%	8%
	cetostearyl alcohol	8%	8%
	methylparaben	0.1%	0.1%
	propylparaben	0.05%	0.05%
	xanthan gum (2% aqueous solution)	10%	—
	storage stability	○	×

## [Method of preparation]

The components in (I) and the components in (II) were separately mixed and heated to 85°C. To the mixture of the components in (I), the mixture of the components in (II) was gradually added while stirring the mixed components (I) by a homomixer. After cooling the mixture to 30°C while stirring, the stirring was stopped and the resultant mixture was left standing at room temperature.

## [Results]

As is clear from Table 2, the emulsified composition of the present invention (Example 6) exhibited more excellent storage stability, in comparison with the emulsified

composition of Comparative Example 5.

Examples 7 and 8 and Comparative Example 6:

Emulsified compositions each having a composition as shown in Table 3 were prepared according to the preparation method described below. Using the compositions, storage stability tests as aforementioned were conducted.

Table 3

composition		Ex.7	Ex.8	Comp. Ex. 6
I	sodium surfactin	2%	2%	2%
	glycerin	8%	8%	8%
	cholesterol	0.4%	0.4%	0.4%
	squalane	21.25%	21.25%	21.25%
	cetyl alcohol	4%	4%	4%
	isononyl isononanoate	8%	8%	8%
	glyceryl tri-2-ethylhexanoate	8%	8%	8%
	dimethicone	8%	8%	8%
	xanthan gum	0.2%	0.2%	—
	methylparaben	0.1%	0.1%	0.1%
	propylparaben	0.05%	0.05%	0.05%
II	purified water	balance	balance	balance
	citric acid (10% aqueous solution)	0.2%	—	—
storage stability		○	○	×

[Method of preparation]

The components in (I) and the components in (II) were separately mixed and heated to 85°C. To the mixture of the components in (I), the mixture of the components in (II) was gradually added while stirring the mixed components (I) by

a homomixer. After cooling the mixture to 30°C while stirring, the stirring was stopped and the resultant mixture was left standing at room temperature.

[Results]

As is clear from Table 3, the emulsified compositions of the present invention (Examples 7 and 8) exhibited more excellent storage stability, in comparison with the emulsified composition of Comparative Example 6.

**Example 9:moisturizing cream**

A moisturizing cream having a composition as shown in Table 4 was prepared according to the preparation method described below and storage stability test as aforementioned was conducted.

Table 4

composition		Ex.9
I	sodium surfactin	2%
	glycerin	8%
	1,3-butanediol	2%
	purified water	balance
II	squalane	9.65%
	liquid paraffin	16%
	isononyl isononanoate	8%
	glyceryl tri-2-ethylhexanoate	8%
	dimethicone	8%
	cetostearyl alcohol	8%
	methylparaben	0.1%
	propylparaben	0.05%
	xanthan gum (2% aqueous solution)	10%
	sodium hyaluronate (1% aqueous solution)	8%
dipotassium glycyrrhizinate		0.2%
storage stability		○

**[Method of preparation]**

The components in (I) and the components in (II) were separately mixed and heated to 85°C. To the mixture of the components in (I), the mixture of the components in (II) was gradually added while stirring the components (I) by a homomixer. After cooling the mixture to 30°C while stirring, the stirring was stopped and the resultant mixture was left standing at room temperature.

**[Results]**

The obtained cream exhibited an excellent storage stability. Moreover, the cream had an excellent moisturizing action, was non-irritant and provided smooth feeling upon use.

**Example 10:emollient lotion**

An emollient lotion having a composition as shown in Table 5 was prepared according to the preparation method described below and storage stability test as aforementioned was conducted.

Table 5

composition		Ex.10
I	sodium surfactin	2%
	glycerin	8%
	1,3-buthanediol	2%
	purified water	balance
II	squalane	9.65%
	cetyl 2-ethylhexanoate	8%
	octyldodecyl myristate	8%
	isononyl isononanoate	8%
	glyceryl tri-2-ethylhexanoate	8%
	macadamia nut oil	4%
	cetostearyl alcohol	2%
	phytosterol	0.4%
	methylparaben	0.1%
	propylparaben	0.05%
	xanthan gum	0.2%
	sodium hyaluronate (1% aqueous solution)	8%
storage stability		○

[Method of preparation]

The components in (I) and the components in (II) were separately mixed and heated to 85°C. To the mixture of the components in (I), the mixture of the components in (II) was gradually added while stirring the components (I) by a homomixer. After cooling the mixture to 30°C while stirring, the stirring was stopped and the resultant mixture was left standing at room temperature.

[Results]

The obtained lotion exhibited an excellent storage stability. Moreover, the lotion had an excellent emollient property, was non-irritant and provided smooth feeling upon use.

**INDUSTRIAL APPLICABILITY**

According to the present invention, an oil-in-water emulsified composition which is excellent in feeling upon use, moisture retention, emollient property and stability as well as environmental suitability and safety for living organisms.